

A BLIND TERRESTRIAL WATER BEETLE
FROM AUSTRALIA

C.H.S. WATTS,
Department of Agriculture Veterinary Sciences Division,
Box 14, Rundle St., P.O., Adelaide, S.A.

ABSTRACT

Terradessus caecus, a new genus and species of hydroporine Dytiscidae is described from a mountain top in North Queensland. The species lives in rainforest litter and lacks eyes and most swimming modifications.

INTRODUCTION

In 1979 Brancucci (1979) described a small dytiscid beetle from the floor of primary forest at altitudes of between 1700 m and 2150 m in the southern Himalayas. This was the first reported discovery of a terrestrial dytiscid. I describe here a second genus and species of terrestrial dytiscid, from Australia. Like the Indian species it is very small and was found on the floor of high altitude forest. In addition it is blind.

Terradessus gen. nov. Dytiscidae-Hydroporinae

Small, flattened, wingless and eyeless. Head lacking raised clypeal margin or cervical stria. Pronotum without striae, wider than elytra. Plane of anterior ventral surface of prothorax not greatly different from plane of prothoracic process and rest of ventral surface. Metacoxal plate and first abdominal segment fused. Elytra fused, without striae. Metatrochanters large, widely separated, exposed. Metatibia slightly arcuate, slightly narrower at base. Pro- and mesotarsi with segments 1-3 swollen, segment 4 minute. Metatarsus undifferentiated. Meta- and mesotibia with many short stout spines, lacking swimming hairs. Parameres asetose.

TYPE SPECIES: *Terradessus caecus* n.sp. (Plate 1, A-F)

Small (1.3 mm long, 0.7 mm wide), flattened, elytral edges subparallel, roundly narrowing in posterior third. Brown, edges of pronotum and appendages a little lighter. Head broad, evenly but sparsely punctured by small sharp punctures,

finely reticulate. Pronotum broad with even, well-marked lateral flanges, longer in midline; punctures as on head except for a few larger ones along anterior margin and a general enlargement toward posterior angles, strongly reticulate as on head. Elytra flattened, extreme anterior angles flanged, lacking margined epipleural pits, epipleurae narrow, widening beneath anterior elytral flanging, reticulate, strongly and evenly punctate, slightly weaker towards midline anteriorly, without striae. Underside reticulate, strongly and deeply punctured. Legs stout, metatrochanters large. Metacoxal lines weakly raised, widely separated, subparallel, diverging in anterior third. Prothoracic process long, narrow. Apical segments of antenna slightly enlarged.

MALE: Pro and meso claws slightly stronger than in female. Aedeagus simple, widest a little posterior to apex which is bluntly pointed, dorsal surface with broad midline groove.

SPECIMENS EXAMINED: Holotype ♂ (Queensland Museum, T.8505) Queensland (NEQ) Mt. Sorrow summit, Cape Tribulation, 19.x.1980, G.B. Monteith, Q.M. BERLESATE No. 262, 16-08 S, 145-26 E, rainforest, 800 m. Sieved litter. Allotype and 6 paratypes same data, 9 paratypes same data except BERLESATE No. 261. All specimens are in the Queensland Museum, except two paratypes in the author's collection, two paratypes in the Australian National Insect Collection, Canberra, and one paratype in the British Museum.

DISTRIBUTION.

The only known locality is the top of Mount Sorrow in North Eastern Queensland.

RELATIONSHIPS.

Although *T. caecus* clearly belongs to the subfamily Hydroporinae to which tribe, if any, it belongs is not clear. I have placed it in the Bidessini on the grounds of its very small size, its fused metacoxal plate and first abdominal segment and its simple aedeagus. It is unusual among the Bidessini in the strongly reticulate surface, weakly deflexed prosternal process, lack of pronotal and elytral striae and in having the hind tibia not greatly narrowed basally as in many genera in the Bidessini. In some of these characters it resembles the Hydroporini, in particular *Paroster*. The surface sculpture is typical of *Paroster* as is the narrow prothoracic process, spined mesotibia, broad metacoxal process, large exposed metatrochanters and simple aedeagus.

Its small size, widened rather than narrowed pronotal base, lack of any trace of elytral grooves and simple aedeagus separates it from the Carabhydrini.

In many aspects *Terradessus* resembles the Bidessini genus *Geodessus* recently described from Northern India and Nepal (Brancucci, 1979). *Geodessus* is also terrestrial, devoid of dorsal striae, lacks swimming hairs and is very small (1.5 mm). From the figures and description it differs from *Terradessus* in many small points. Unlike *Terradessus*, *Geodessus* has well-developed eyes. The keys to Australian Dytiscidae given in Watts (1978) will not accommodate *Terradessus* below the subfamily level. The genus, however, is readily recognized by its lack of eyes and very small size. Ordish (1976) has described two blind genera of minute Bidessini from subterranean waters in New Zealand, viz. *Kuschelhydrus* and *Phreatodessus*. Both these genera differ markedly from *Terradessus* by their constricted pronotal base, their long setae on elytra and pronotum, and their normal fringe of swimming hairs on the hind legs. *Terradessus* differs from the blind, subterranean hydroporine genus, *Morimotoa*, described by Uéno (1957) from Japan by its lack of swimming fringes on legs and dorsal setae.

HABITS.

Little is known of the life history of this intriguing dytiscid. All specimens were collected by berlese extraction of leaf litter from the rainforest floor. Although the area is one of high

rainfall and high fog precipitation, the area the beetles were collected from was devoid of standing water and they cannot be considered aquatic. Eyelessness is most often associated with a subterranean existence. Flightlessness is more common but could also be associated with a subterranean lifestyle. On the little evidence available, it is perhaps most likely that this minute, flattened dytiscid is adapted to live deep within leaf litter that is wet for much of the time and damp for most. Judging by the number collected the beetles are quite common in this environment. Whether or not the larvae also live in this environment is unknown but it would be surprising if they did not.

Terradessus and *Geodessus* seem to be exploiting a similar niche and detailed comparisons between the two genera would be interesting. Between Nepal and Australia there are many similar habitats which could well yield more examples of reinvasion of the land by dytiscid beetles. The presence of *Terradessus caecus* on Mount Sorrow is undoubtedly another example of the disjunct, relict insect fauna of these wet North Queensland mountain tops referred to by Monteith (1980).

ACKNOWLEDGEMENTS

I thank Dr. G.B. Monteith of the Queensland Museum for collecting this strange beetle and drawing it to my attention. The scanning electronmicrographs were prepared in the Queensland Museum by Mr. R.J. Raven.

LITERATURE CITED

- BRANCUCCI, M., 1979. *Geodessus besucheti* n. gen., n.sp. le premier Dytiscide terrestre (Col., Dytiscidae, Bidessini). *Ent. Basiliensia* 4: 213-8.
- MONTEITH, G.B., 1980. Relationships of the genera of Chinamyersiinae, with description of a relict species from mountains of North Queensland. (Hemiptera: Heteroptera: Aradidae). *Pacific Insects* 21: 275-85.
- ORDISH, R.G., 1976. Two new genera and species of subterranean water beetle from New Zealand (Coleoptera: Dytiscidae). *New Zeal. J. Zool.* 3: 1-10.
- UÉNO, S.-I., 1957. Blind aquatic beetles of Japan, with some accounts of the fauna of Japanese subterranean waters. *Arch. Hydrobiol.* 53: 250-96.
- WATTS, C.H.S., 1978. A Revision of the Australian Dytiscidae (Coleoptera). *Aust. J. Zool. Suppl. Series*, 57.

PLATE I

TERRADESSUS CAECUS GEN. ET. SP. NOV.

- A. Dorsal view.
 - B. Ventral view.
 - C. Head and mouthparts.
 - D. Dorsal view of fore tarsus.
 - E. Aedeagus and paramere, dorsal view.
 - F. Aedeagus and paramere, ventral view.
- (All scale lines equal 100 μ .)

